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WATER CONSUMPTION IN NEW YORK DURING TWO SEVERE WINTERS

The winter of 1917–18 will long be remembered by water works managers as having set new records for high consumption due to extreme cold. The past winter failed to record as extremely low temperatures as those of 1917–18, but was almost as severe on account of the continuance of low temperatures for a long period. A comparison of the consumption of New York City for these two severe winters is of interest. In this comparison the consumption for the months of October and November of each of the years is taken as a basis, as these months are substantially free from any effect on consumption due to temperature or rainfall. The comparative figures expressed in million gallons daily and in percentage of increase for October and November are as follows:

	Winter 1917-18	*Winter 1919-20*
Average for October and November—Consumption	548	634
Average for December, January and February—Consumption	626	700
Average for December, January and February—Percentage increase	14	10
Maximum consumption for one day	784	761
Percentage increase of above over October and November	43	20
Maximum consumption for two consecutive days	743	754
Percentage increase of above over October and November	36	19
Maximum consumption for three consecutive days	731	751
Percentage increase of above over October and November	33	18
Maximum consumption for one month	655	721
Percentage increase of above over October and November	20	14

The temperature averages during these periods were as follows:

	Winter 1917-18	*Winter 1919-20*
December	25.0°	30.0°
January	21.6°	24.1°
February	29.6°	29.1°
Average for three months	25.4°	27.7°
Extreme temperature—one day	−13.0°	−3.0°
Extreme temperature—two consecutive days	−10.0°	−3.0°
Extreme temperature—three consecutive days	− 8.7°	+4.7°
Extreme temperature—one month	14.0°	16.6°

It will be noted from the statistics given above that the winter of 1917–18 recorded higher percentages of increase than the winter of 1919–20, and that the maximum consumption recorded for one day occurred in the 1917–18 period, although for two or more days a higher consumption was recorded in 1919–20. A comparison between the winter preceding these two winters shows that the increase in consumption was substantially the same in each case. Thus, January, 1918, shows 106 m.g.d. more than January, 1917, while January 1920, shows 108 m.g.d., more than January, 1919. The corresponding figures for February are 119 m.g.d. and 123 m.g.d. The consumption in the winter of 1918–19 as compared with 1917–18 showed a reduction for January of 41 m.g.d., this difference being carried substantially throughout the winter.

These results illustrate the impossibility of forecasting winter consumption with any certainty within possibly 15 per cent, and the difference may be even greater. There are so many uncertain factors that enter into the consumption of a community, especially a large manufacturing and commercial center like New York, that no estimate of future consumption can be relied on. The best that can be done is to point out the probable line of increase in consumption, with a knowledge that the actual record may be above or below that estimated, depending upon the business activities, the force employed on water waste prevention, the temperature both winter and summer, the rainfall, the housing conditions, and numerous other less important factors.

The housing condition is a rather new factor in affecting water consumption. In Manhattan, where only about 8 per cent of the tenants own the property they occupy, the relationship between tenant and landlord has in the past been such as to make the tenant inclined to complain if the noise of water escaping through a leaky fixture caused him any annoyance. With the present housing shortage in New York City, the tenant in general is very desirous of retaining the good will of his landlord, and is not inclined to complain even though he is subjected to much greater annoyances than those which previously would have brought forth a prompt and vigorous complaint.

It is, therefore, to be expected that the leakage through defective fixtures will be a rather larger factor in the immediate future than is has been in the past. This and the great business activity in the latter part of 1919 constitute two important factors in causing an unusually large increase in consumption in New York City.

WM. W. BRUSH.